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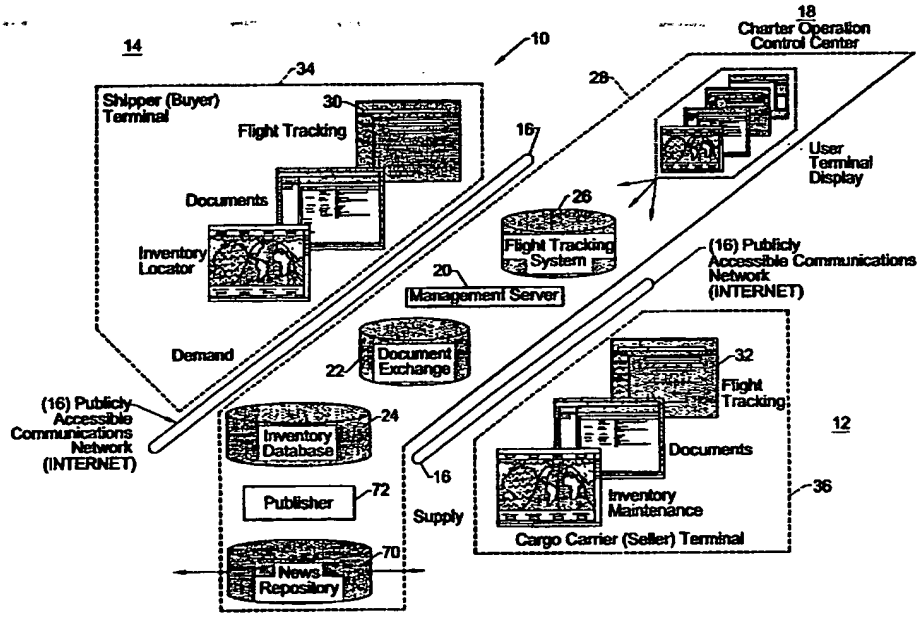

(57) Abstract: A system and method of the present invention facilitates cargo charter flights. An operations control center includes a management server that is in communication with a terminal of a cargo carrier and a terminal of a shipper via a publicly accessible communications network. The availability of a cargo carrier for transporting cargo with a shipper having cargo to be shipped to a destination is matched through the management server. Each of the cargo carrier and shipper access via their respective terminals a document exchange server located at the operations control center to negotiate the terms of a charter contract between the cargo carrier and shipper.

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SYSTEM AND METHOD OF FACILITATING CARGO CHARTER FLIGHTS

Field of the Invention

This invention relates to the field of electronic commerce, and more particularly, this invention relates to the field of facilitating cargo transport using a communications network.

Background of the Invention

Aircraft charters constitute a large portion of the domestic and international air transport industry. More than 90% of all aircraft charters, and more particularly, aircraft cargo charters, are one-way charters, such as from San Francisco to Orlando, with no return leg. However, in these one-way charters, the shippers, i.e., buyers, are charged for an empty return leg, for example, such as the return leg from Orlando to San Francisco. There are over 1,000 charters per day worldwide and over 200 different carriers that provide aircraft for charter. There are about 2,000 users, e.g., shippers, that use these services.

The pricing is typically specified in dollars per mile or dollars per hour. One current practice is to use a fixed dollar per mile rate to the shipper and manipulate the billable miles by charging for miles not flown. For example, in a charter from San Francisco to Orlando, the billable hours can be manipulated to send a plane that was originally based in Sacramento to San Francisco. As an example of different aircraft types and associated prices, a Lear jet could have a rate of

about $3 per mile and a B747 could have as high a rate of about $25 per mile. In between these types of planes are mid-sized planes having a number of different rates, such as a DC9 having a rate of about $11 per mile and a B727 having a rate of about $13-15 per mile. Although these are only examples that vary over time and with company, they are examples showing the different rates among different sized planes.

Typically, the charter industry is dominated by closed systems where one supplier, e.g., carrier, is preeminent and controls pricing. Any shipper usually finds it difficult to locate aircraft that are not strongly aligned to a single carrier. Another difficulty is the significant number of aircraft that fly fixed schedules to relocate to a primary origin point. These aircraft are unchartered, but could be chartered. Some carriers use a fixed schedule for charter flights to gain better control over the allocation of their aircraft. Thus, a significant number of vital aircraft exist that could be available for chartering if there was an expanded market or air integrator. Another problem in the air charter business is inefficient and ad-hoc communication in the industry typically done by telephone, fax, etc. Thus, the communication lacks transparency to support practices that would eliminate one-way charters and pricing as specified in terms of a fixed dollar per mile rate and manipulated by charging for miles not flown.

Summary of the Invention

It is therefore an object of the present invention to provide a real-time system and method for buying and selling aircraft cargo charter flights.

It is still another object of the present invention to provide a real-time exchange for buying

and selling cargo charter flights where an open market is provided based on actual supply and demand and where charter flights can be bid on the basis of a requested leg only at a price the market will bear at the time of transaction.

In accordance with the present invention, the system and method of facilitating cargo charter flights includes the step of providing an operations control center having a management server that is in communication with a terminal of a cargo carrier and a terminal of a shipper via a publicly accessible communications match network. The availability of a cargo carrier for transporting cargo with a shipper having cargo to be shipped to a destination is matched through the management server. Each of the cargo carrier and shipper accesses a document exchange server located at the operations control center for negotiating the terms of a charter contract between the cargo carrier and shipper.

In accordance with another aspect of the present invention, availability records relating to available cargo charter flights are stored within the management server. Shipper inquiries for any available cargo charter flights that meet predetermined criteria are input into the communications network to the management server. A match is produced within the management server between a shipper inquiry and an available cargo charter flight. A bid process then can be commenced and negotiations begun between the shipper and cargo carrier.

A plurality of shipper inquiries can be stored and selected shipper inquiries can be maintained active for a predetermined period of time in which a cargo carrier can respond to the shipper inquiry. In still another aspect of the present invention, the

cargo carrier can input into the communications network a carrier demand inquiry, which can be stored within the management server. The carrier demand inquiries request a shipper to make an offer on available cargo charter flights. The management server matches the carrier demand inquiries with shipper inquiries within the management server to solicit an offer. Selected carrier demand inquiries can be maintained active for a predetermined period of time in which a shipper can respond.

The document exchange server also provides each of the cargo carrier and shipper with electronic documents to display at respective terminals of the cargo carrier and shipper. The shipper can initiate a request for quote and a cargo carrier can offer a contract with terms in response to the request for quote. The publicly accessible communications network can comprise an Internet using the worldwide web, as known to those skilled in the art. In still another aspect of the present invention, available cargo charter flights can be input by the cargo carrier within an inventory database connected to the management server. A shipper can access the inventory database connected to the management server for selecting available cargo charter flights. It is also possible to publish ad-hoc availability by a cargo carrier onto the communications network to the management server. The physical tracking, palletization and loading/unloading processes can be coordinated through the document exchange server.

In yet another aspect of the present invention, a chartered flight can be tracked while in the air on a display located at the terminal of the shipper. This tracking can occur based on the tail number of the aircraft corresponding to the cargo

charter flight. Tracking typically occurs on a graphical user interface of the display, showing the geographic location of the charter flights.

In still another aspect of the present invention, a method of facilitating cargo charter flights comprises the steps of inputting the availability of a cargo charter flight into an inventory database connected to a management server located at a charter operations control center that is in communication via a publicly accessible communications network with a terminal of a cargo carrier and a terminal of a shipper. The inventory database is searched for desired criteria of available cargo charter flights. A listing of any cargo charter flights is received at the terminal of the shipper. These cargo charter flights meet a desired criteria as specified by the shipper. A desired cargo charter flight is then selected based on the received listing and a request for quote is initiated via a document exchange server located at the operations control center.

In still another aspect of the present invention, a method of facilitating cargo charter flights comprises the step of providing a management server located at an operations control center that is in communication via a publicly accessible communications network with a terminal of at least one cargo carrier and a terminal of at least one shipper. An inquiry is then input into the communications network to the management server from the shipper terminal indicating an interest in chartering a cargo charter flight. The management server then matches the shipper inquiry to a cargo carrier and each of the shipper and cargo carrier can access a document exchange server located at the operations control

center to negotiate the terms of a charter contract between the cargo carrier and shipper.

In another aspect of the present invention, a method of facilitating cargo charter flights includes the step of providing a management server located at a charter operations control center that is in communication with a terminal of at least one cargo carrier and a terminal of at least one shipper via a publicly accessible communications network. A carrier demand inquiry is input into the communications network to the management server from the terminal of the cargo carrier. This carrier demand inquiry indicates the availability of a cargo charter flight. A shipper can respond to the carrier demand inquiry by inputting a shipper inquiry and matching through the management server a shipper and the carrier demand inquiry. Each of the shipper and cargo carrier accesses a document exchange server located at the charter operations control center and negotiates the terms of a charter contract between a cargo carrier and shipper.

In another aspect of the present invention, a system facilitates cargo charter flights and includes an operations control center. An inventory database stores data, i.e., availability records, relating to the availability of cargo charter flights of a plurality of cargo carriers. A management server is formed as part of the computer processor and associated inventory database and connected to a publicly accessible communications network for receiving a carrier demand inquiry from a terminal of a cargo carrier relating to the availability of a cargo charter flight. Shipper inquiries are received from a terminal of a shipper connected to the communications network to request a cargo charter. The network manager matches shipper and cargo carrier. A document exchange server

negotiates the terms of a charter contract between the carrier and the shipper.

Brief Description of the Drawings

Other objects, features and advantages of the present invention will become apparent from the detailed description of the invention which follows, when considered in light of the accompanying drawings in which:

FIG. 1 is a diagram illustrating the basic function and flow of information among the operations control center and a shipper and cargo carrier.

FIG. 2 is a more detailed diagram of the operations control center and the flow of information between a cargo carrier and shipper.

FIG. 3 is a diagram illustrating an example of the contract formation between a cargo carrier and shipper.

FIG. 4 is another diagram showing a basic cargo charter process of the present invention where the cargo carrier has input availability to an inventory database.

FIG. 5 is a diagram showing the charter scenario when a shipper registers in the network an interest in availability.

FIG. 6 is a diagram illustrating when a cargo carrier registers an area of interest.

Detailed Description of the Preferred Embodiments

The present invention is advantageous because it now provides a real-time network, i.e., Internet, with a system and method for buying and selling cargo charter aircraft flights and facilitating the exchange of information for a charter contract formation between a shipper (buyer) and cargo carrier (seller). Cargo carriers, i.e., sellers, can register available flights, publish ad-hoc availability to shippers, i.e.,

buyers, and provide ad-hoc responses to specific requests from shippers for their aircraft. Shippers can search for suitable charters in a database for registered availability, and receive published ad-hoc availability from sellers, publish requests for availability to cargo carriers, and negotiate on-line in real time with selected cargo carriers to charter cargo aircraft.

As shown in FIG. 1, illustrating the overall system at **10**, both the cargo carrier **12** and the shipper **14** can manage the process from ordering to completion through access via a publicly accessible communications network **16**, e.g., the Internet, to an operations control center **18** having a management server **20** that allows document exchange via a document exchange server **22**, inventory control via an inventory database **24**, and flight tracking via a flight tracking system server **26**. These components and servers could be included as software programs in one computer as noted in the dashed lines at **28**. It is also possible that the management server and other servers could be separate computer systems, such as separate, but networked personal computers. The operations control center **18** can include appropriate staff to assist a cargo carrier **12** or shipper **14** towards a charter contract.

The entire system **10** is preferably a web-based system accessible via the Internet and Worldwide Web with an appropriate network, web address such as CargoCharters.com, thus allowing transport services to be made publicly available through a portal for the global trade community. The term "public" can refer to the access required by the global trade community. The system can occur as a stand-alone

service to provide a user interface to manage freight space.

The system has several benefits. A shipper has the benefit of an open, trusted market in which price is based on actual supply and demand. Charter costs can be reduced by switching to a single charter price system that removes opportunities for hidden, additional costs for dead legs and unflown billable miles. As referred to in this description, a "leg" is a specific path between two points, such as San Francisco and Orlando. A "route" is typically one or more legs, such as San Francisco to Orlando or Orlando to San Francisco or San Francisco to Orlando to Miami. The "tail number" is a unique identifier for a specific aircraft, as known to those skilled in the art. The term "flight" refers to a specific execution of a route by specific tail number, such as flight UA432 at 1700 on January 11, 2000. A "charter contract" is a contract between a shipper and cargo carrier in which the cargo carrier undertakes to supply an aircraft on specified terms, e.g., ACMI=aircraft, crew, maintenance and insurance. The charter contract can include an ad-hoc charter, which is a contract between a shipper and cargo carrier for the one-time charter of a specific tail number for a specific leg. The charter contract can include a scheduled charter, which is a contract between a shipper and cargo carrier for an aircraft to fly the same route more than one time, to fly from San Francisco to Orlando to Miami and back to San Francisco, every Thursday for the next three months.

The present invention is advantageous because cargo carriers can bid for charter flights on the basis of a requested leg at a price the market will bear at the time of transaction. Thus, cargo carriers can

openly sell all legs of a flight plan without conflicting with the initial leg, allowing better revenues through an extended market for standing assets. The system and method allows reduced administration costs through an efficient and timely ordering and management process and shorter aircraft turnaround times because of earlier loading information and greater certainty through an electronic audit trail.

FIG. 1 also illustrates that the shipper and cargo carrier can operate through graphical user interfaces (GUI) **30,32** displayed at respective terminals indicated by the dotted lines at **34** and **36**. The GUI's **30,32** allow for document exchange, aircraft charter inventory location and flight tracking for the shipper, and inventory maintenance, document exchange and flight tracking for the cargo carrier. Various chartering scenarios can exist. For example, an ad-hoc aircraft with a specific tail number could be idle unless contracted for charter. The location of the aircraft is dependent on the last charter flight. If the aircraft is idle at an airport, it can be charted for any route within the aircraft's capability. The aircraft could be relocated to another airport to meet a charter request, provided the aircraft can meet the timing and load requirements.

Also, an aircraft may not be the same tail number and could fly a route on a regular basis, but have idle periods within its schedule that could be made available for chartering. In this ad-hoc charter, a route could be operated by a carrier, such as from City A to City B to City C and back to City B and then City A, every Monday through Friday, leaving City A at 0900 and returning to City A at 1700. Between Friday at 1700 and Monday at 0900 every week, the aircraft

could be available for charter under the same rules as any ad-hoc charter, with the exception that the aircraft must be back at City A before 0900 on Monday.

Chartered aircraft can also operate on scheduled routes. An operator of scheduled routes can use an aircraft from another carrier and control that aircraft. For example, the operator could request a charter for regularly scheduled routes, e.g., from City A to City B to City C and back to City B and City A, every day Monday through Friday, leaving City A at 0900 and returning to City A at 1700.

For purposes of this description, aircraft can be in two availability categories: (1) aircraft specifically owned for purposes of chartering, and which are available for charter when the aircraft is not an active charter; and (2) aircraft flying regular scheduled routes for specific business purposes, e.g., air courier operations, which have significant idle periods between scheduled routes, and are therefore available for chartering. Aircraft could be available for charter when a shipper desires an ad-hoc scheduled charter. For a shipper, it is not relevant whether an aircraft is one used for ad-hoc charters or operated on regularly scheduled routes. It is only relevant if it has an availability window that matches the charter request parameters. In the present invention, a shipper could be a carrier that operates scheduled routes but uses charter aircraft to operate the flights, for example, a company owned or controlled aircraft.

FIG. 2 shows that the management server **20** uses logical matching rules **40** to match a shipper and a cargo carrier. The matching rules are based upon supply inquiries, also known herein as shipper inquiries, and carrier demand inquiries, which are

stored in the inventory database **24** as associated with management server **20** at the operations control center **18**.

The matching rules **40** are based on commercial standards. To match aircraft availability to a charter opportunity, the aircraft type must be able to accommodate the weight and size of a proposed cargo load and be able to fly a specified distance from the point of origin. It must be present or relocate to the point of origin in sufficient time to collect a cargo load and complete the route from the origin to a shipper destination.

A seller of ad-hoc availability for an aircraft can operate scheduled routes and allow for the relocation of an aircraft to its start point for regular scheduled operations. The seller must specify a start point in order for the management server to calculate its true availability. Also, the current location of an aircraft should be specified for ad-hoc charters to allow the management server to calculate what aircraft are capable of being at the origin on time. It could be possible to ignore the current location of an aircraft, but this would lead to bogus offers where a seller could never make the aircraft available in time to meet the criteria of a requested charter. It is possible that a cargo carrier has elected to do so only for marketing purposes. The management server will strike a balance between having offers of high integrity and imposing numerous constraints that would make sellers reluctant to place inventory on the system.

The current location of an aircraft does not have to be specified for scheduled charters. A cargo carrier can relocate its aircraft from anywhere in the world to gain a long-term scheduled contract. For

example, if a charter opportunity for multiple flights over an extended period arises, the current location of an aircraft could be irrelevant because the cargo carrier **12** could elect to relocate an aircraft and crew over a substantial distance to acquire a long-term charter contract. The cost could be an issue for the first flight, but in practice, any negotiation between the shipper and cargo carrier would be extended, and a decision to re-charter for a long-term contract could be taken in advance.

A potential shipper **14** specifies origin and destination and the management server **20** calculates the distance and matches the route to aircraft capability. A potential cargo carrier **12** specifies the aircraft type, but it does not have to specify a destination, because the aircraft is available for any destination within its capabilities. Because the system is open, shippers **14** and cargo carriers **12** can view all availability, and all active searches through individual shippers and cargo carriers. They modify their own information. The system allows cargo carriers **12** and shippers **14** to view all supply and demand, creating a more dynamic market. Pricing responses reflect supply and demand. Because it is impossible to prevent some individuals from entering bogus requests and/or availability, any staff located at the operations control center **18** can review all records and delete those that are appropriate via a GUI **42**.

For purposes of this description, "shipper inquiry" is an entry in the inventory database **24**, and specifies a shipper's criteria for interest in active availability records or related information. An "availability record" is an entry into the managememt

server **20** and inventory database **24** that specifies a cargo carrier's available aircraft. A "carrier demand inquiry" is an entry in the inventory database **24** and management server **20** that specifies a cargo carrier's interest in active shipper inquiries. The term "active" refers to a record that is flagged by a user for use by the system and any searching, viewing or matching processes. "Inactive" refers to a record that is stored by a user for later use and not to be used in current searching or matching process. The user could still view and modify that record, however.

The graphical user interfaces **30,32** allow the shipper **14** and cargo carrier **12** to interact with the management server **20** located at the operations control center **18**. The graphical user interfaces provide the ability to create, store, view, modify and make "active" or "inactive" and allows a user to delete availability records based on location, aircraft type and time. Shipper inquiries can be created, stored, viewed and modified and made "active" or "inactive" based on location, freight characteristics and time. Active availability records could be viewed that match a shipper inquiry at the time it is made active. The graphical user interfaces **30,32** allow notification to be received of new, active availability records, which match existing active shipper inquiries. Carrier demand inquiries can be created, stored, viewed, modified and made "active" or "inactive" based on location, freight characteristics and time. "Active" shipper inquiries can be viewed that match a carrier demand inquiry at the time it is made "active". New "active" shipper inquiries can be received to allow notification that match existing "active" carrier demand inquiries. The graphical user interfaces **30,32**

also allow for the negotiation and managing of a charter contract through the document exchange server and allows tracking on a geographic display, such as provided by a third party.

One advantageous aspect of the present invention is the use of the system as if no distinction exists between a cargo carrier and a shipper. Any user could act as either cargo carrier **12** or shipper **14** as happens in the real world. All cargo carriers **12** and shippers **14** could view current demand as shown by active shipper inquiries and determine a price negotiation position. The "active" status for any shipper inquiry or demand inquiry can be set "once" or "for a defined period". If an "active" status is set "once," then the submission of a record is viewed by the management server **20** as a one-time query and only shows active availability records or supply/demand inquiries as appropriate to the original inquiry stored in the inventory database. The "active" status for an availability record can be "active" or "inactive" because the availability record is defined by user input relative to the availability of an aircraft. An originator can delete all inquiries and records, and the system could have to purge all records and inquiries that become "inactive" because an end date is earlier than a current date.

Any staff located at the operations control center **18** would have access to the same user interfaces as the cargo carrier and shipper via the graphical user interface **42**. This allows the staff to act on behalf of either party by fully or partially managing a charter process. The staff would also have administration screens as part of their GUI **42** to facilitate the addition and maintenance of user

records, which control access to the overall management server and other components of the system.

The management server **20** of the present invention works in association with the inventory database **24** to allow shippers **14** and cargo carriers **12** to communicate information between them in real time about aircraft supply and demand. The inventory database **24** stores shipper and carrier demand inquiries and availability records. The management server **20** provides the matching capabilities through the use of a set of business rules for validating the input of all shipper and carrier demand inquiries and availability records. The management server matches active inquiries and records at the time of input, and on a periodic basis defined by a system administrator at the operations control center **18**. A publisher can automatically inform users of new inquiries and availability records that match current active inquiries. The system administrator can also set up an entitlement system at the operations control center **18** to control a users's access rights.

The management server **20** obtains information from the inventory database **24** of availability records that are directly input by cargo carriers via an Internet browser through the terminal of the cargo carrier. It is also possible to obtain information from an interconnected information system of a cargo carrier or from an interconnected system of a third party, e.g., OAG, that could provide information on behalf of the cargo carrier. The shippers can provide shipper inquiries from an internal database or directly from the interconnected information system of a shipper.

The document exchange server **22** allows for the filing of electronic documents, such as quotations, orders, shipping instructions, contracts, advice and other legal documents. When a shipper **14** and one or more cargo carriers **12** have identified a possible match in charter requirements and availability, the document exchange server **22** provides both parties with a set of electronic documents to conclude orders and manage a charter process to completion. The documents are "filed" in a database memory of the document exchange server **22**, such that authorized parties can track the progress of the process. All documents have a corresponding acknowledgement document or response for the formal confirmation of receipt and acceptance of information.

FIG. 3 illustrates a basic flow in a contract negotiations. The basic flow would include a request for quote **60** followed by a contract offer **62** with terms. A discussion of terms **64** follows with a contract confirmation **66**. Ancillary services **68**, such as truck loading, palletization and other details are discussed, followed by a load list **70** and proof of delivery **72**. Typical documents stored and processed by the centralized document exchange server **22** include a request for quote, a quote, an order, an order confirmation, i.e., a charter contract, a load list, delivery confirmation, and a discussion of terms and timing. The quotation/order process applies to the charter contract, but could also be used for handling ramp services, consolidation and trucking processes.

The flight tracking system server **26** allows both the shipper **14** and cargo carrier **12** to track in flight aircraft based on tail number. Tracking can be done via a graphical user interface. It is possible to

use a third party service, as known to those skilled in the art, to track the aircraft. The operations control center **18** will typically be staffed 24 hours a day, 7 days a week. The same graphical user interface **42** and Internet tools used by the staff are the same as the GUI **30,32** and Internet tools used by shippers and cargo carriers. The staff at the center **18** can provide services ranging from facilitating a charter to ad-hoc requests for information or assistance. The center **18** could have a repository (database) **70** of relevant industry related news, which can be accessed by the shipper and cargo carrier through their graphical user interfaces **30,32** via the communications network **16**.

As noted before, FIG. 2 illustrates the information flow that exists among the shipper **14**, operations control center **18** and management server **20**, and inventory database **24**, where matching rules **40** are processed with cargo carrier and shipper inputs to match a shipper and cargo carrier based on availability. The document exchange server **22** with the management server **20** obtains the quotations from one or more cargo carriers to manage information exchange during the chartering process.

The present invention allows cargo carriers **12** to advertise availability and shippers **14** to match the advertised availability with their shipping requirements. Because the entire system and method is open to both shippers and cargo carriers, the management server **20** and inventory database **24** can store all availability records and inquiries to allow matching by the management server at the instant of creation, or over time. Users can create new records and inquiries by making minor modifications to old

records and inquiries rather than re-entering the information from scratch.

The system and method of the present invention can operate in an asynchronous mode because there does not have to be a relationship in time or sequence between the users for the management server, the inventory database, and the document exchange server. A shipper **14** could possibly make an inquiry the second before or after the cargo carrier **14** enters an availability request that meets any requested criteria. In the former case, the inquiry would produce a match, but in the latter case, the inquiry would not produce a match.

The asynchronous mode allows shipper and carrier demand inquiries to be stored, and retain a specified "active" validity period to ensure a likelihood that supply and demand will be matched. Because any user may not be on-line at the time of a status change that causes a "match" with the specified criteria, the manangement server **20** incorporates a "publisher" function **72** that pushes the changed status to a user, via a user specified mechanism, such as a browser, pager, or e-mail. It is possible to generate high volumes of pushed data, thus, all "active" inquiries could be pushed by the system to minimize data traffic.

The cargo carrier **12** specifies availability by creating an "active" availability record, specifying the aircraft type, the origin(s) at which it can be made available, and over what time period. The shipper **14** can specify the shipper or supply requirements by creating an active supply, i.e., shipper inquiry, either by entering a new inquiry or by modifying a currently stored inquiry. The cargo carrier can set

the inquiry "active" for a period in which the shipper is interested in receiving any bids. The shipper inquiry also specifies the start and end date for the charter, which may be different from the "active" period. For example, a shipper may wish to receive offers for the next 24 hours for a charter flight that is requested to leave in three days.

It is also possible to upload current schedules for all customers who are shippers and registers in an OAG. Each leg of a route could be created as an "inactive" shipper inquiry. The shipper can then convert the required inquiries to "active" shipper inquiries. At this time, a user would view matching availability records on the respective graphical user interface. If an inquiry has been made active with a defined time period, the user can automatically receive an update whenever a newly entered availability record meets the criteria originally specified in the supply inquiry. The management server **20** automatically sets any active record to inactive if the active period and date or the requested charter goods delivery date is later than the current date.

Any user can monitor the total requests submitted by prospective shippers by submitting an active carrier demand inquiry with an appropriate selection criteria. When the carrier demand inquiry is made active, the user will view any matching "active" shipper inquiries. If the inquiry has been made "active" with a defined time period, the user can automatically receive an update whenever a newly entered "active" shipper request meets the criteria originally specified in the carrier demand inquiry.

Any user can monitor the total requests submitted by possible cargo carriers by submitting an

"active" shipper inquiry with appropriate selection criteria. When the carrier demand inquiry is made "active," the user will view any matching availability records. If the inquiry has been made "active" with a defined time period, the user can automatically receive an update whenever a newly entered availability record meets the criteria specified in the shipper inquiry.

In one aspect of the present invention, it is possible to view only "active" availability records. Thus, a shipper cannot view how many cargo carriers may be observing the state of "active" shipper inquiries without submitting an availability record. A possible cargo carrier can watch the market before deciding to make the cargo carrier's aircraft available. Once decided, this cargo carrier can then make a bid by creating an "active" availability record, matching the requested supply criteria, and this will then immediately become known to the possible shipper.

The management server **20** works in conjunction with the inventory database **24** to allow a digital exchange between the shipper and cargo carrier for brokering aircraft charters. Three types of exchange dynamic records can be stored, such as: (1) "I want..." indicating a shipper's need; (2) "I have..." indicating the availability of an aircraft from a cargo carrier; and (3) "Tell me who is looking for...", which tells the initiator how many other shippers have the same requirement. The response to "Tell me who is looking..." is a list of all active "I want...". These logical inputs can be used by either the shipper or cargo carrier to provide intelligence on the state of the market and what price the market will bear. A shipper or cargo carrier can use a "I want..." to observe what other cargo carriers are offering in specific market segments. Because the various records

are stored, a regularly repeating matching program can be run to match records in all three categories on a continuing basis.

The present invention is advantageous over previous prior art systems. In the prior art systems, a business emergency could occur, e.g., a manufacturer's production line will close if parts are not supplied within half a day. Thus, a cargo charter is the only perceived option by the manufacturer. The shipper uses a phone and fax to poll cargo carriers and finds a viable charter. This process is a time consuming, iterative process, which is difficult to audit. The shipper chooses a single cargo carrier and negotiates the final terms and closes a charter contract. The shipper, cargo carrier or an intermediary chosen by one or the other uses the phone and fax to arrange trucking from the source to a local airport, build pallets and load the aircraft at departure. Additionally, the phone and fax are used to arrange unloading and deconstruction of pallets and trucking from the airport to a final destination.

The goods are picked up by the trucking company from the source and delivered to a warehouse for pallet building, and then trucked to a ramp agent at the airport. The ramp agent analyzes the composition of the pallets, determines the correct load plan for the pallets, and loads them on the plane. The plane flies from the origin to the destination. A ramp agent at the destination unloads the aircraft, and a trucking company delivers the goods from the airport to a final destination.

The system and method of the present invention is advantageous and more efficient over the system just described. In the present invention using an open system as previously described in detail, a

business emergency occurs, such as a production line closing if parts are not supplied within half a day. Again, the manufacturer (shipper) perceives that a charter is the only option. The shipper logs onto the network and enters a website to access the management server **20** having in association with it the inventory database **24**, document exchange server **22** and flight tracking system server **26**.

The shipper **14** selects a source, destination and timing of the charter on a map based graphical user interface. The shipper can additionally set a period where it will consider offers from cargo carriers. Any relevant charter availability that is pre-registered with the management server **20** and inventory database **24** is immediately displayed to the shipper at its terminal. If a shipper has indicated a willingness to consider further offers from cargo carriers over a defined period, then the request is published to all the cargo carriers that are registered with the management server with a declared interest in the type of aircraft required for origin and destination points. Any such offers will be automatically displayed on the shipper screen during the specified period. From the total list of available charters, the shipper selects those of interest and uses the document exchange server to issue an electronic request for quotation (RFQ). The cargo carriers respond to the RFQ on-line by selecting appropriate terms from those shown on the form and add any additional terms and free text and specify the price for the transaction.

The shipper then reviews the responses and issues an order by clicking an "accept" button. By securing the primary leg of a charter, the shipper can then advertise all other legs on the service through the communications network via new contractual terms.

The shipper **14** and cargo carrier **12** can then carry on an electronic exchange through the remainder of the charter period to clarify details of the physical activity taking place, and if necessary, record amendments to the original terms.

Prior to any goods being delivered to the airport, the pallet details are provided to the ramp agent via a document provided by the document exchange server **22**. This allows the ramp agent to preplan the load process and guarantee speedy aircraft turnaround time. The physical trucking, palletization and loading/unloading processes occur as normal, but parties are coordinated through the document exchange server. The shipper and cargo carrier track the progress of an aircraft via the tracking system and a graphical user interface, based on the communications network.

FIGS. 4-6 illustrate simplified diagrams of a (1) preregistered flow; and (2) a cargo carrier initiated ad-hoc process; and (3) a shipper initiated ad-hoc process.

In FIG. 4, the cargo carrier **12** inputs availability to the management server **20** and its associated inventory database **24**. Any shippers **14** with specific requirements that meet input search criteria are presented with a list of matching availability. In the event that a shipper desires to pursue the specific cargo carrier's offer, then a shipper will initiate a request for quote via the document exchange server.

In FIG. 5, a shipper **14** can register in a network adaptor **80**, as part of the communications network any interest in availability, for example only, all aircraft capable of lifting 1,000 kilos for 1,000 miles. The network adaptor works in conjunction with

the network manager to monitor all network messages that meet the criteria of the registration of interest.

A cargo carrier **14** can input a message or other details declaring a particular availability. For example, if a 727 is idle at Miami, shipper network adaptors **82** can monitor network messages, and in the event that an offer matches the interest of a shipper, a message could appear on the shipper's screen, at which point the shipper can initiate document exchange to enter negotiations with the cargo carrier.

FIG. 6 illustrates where a carrier can register an area of interest, for example, all requests of less than 1,000 kilos to Miami in a cargo carrier network adaptor **82**. A shipper can input a message of specific requirements, and if the request meets the area of interest declared by a cargo carrier, the request could appear on the cargo carrier's screen, at which point the cargo carrier can send a response to the cargo carrier's request. If the cargo carrier wishes to proceed, the cargo carrier can initiate a request for quote through the document exchange.

Many modifications and other embodiments of the invention will come to the mind of one skilled in the art having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the invention is not to be limited to the specific embodiments disclosed, and that the modifications and embodiments are intended to be included within the scope of the dependent claims.

THAT WHICH IS CLAIMED IS:

1. A method of facilitating cargo charter flights comprising the steps of:

providing an operations control center having a management server that is in communication with a terminal of a cargo carrier and a terminal of a shipper via a publicly accessible communications network;

matching through the management server the availability of a cargo carrier for transporting cargo with a shipper having cargo to be shipped to a destination; and

each of the cargo carrier and shipper accessing via the respective terminals a document exchange server for negotiating the terms of a charter contract between the cargo carrier and shipper.

2. A method according to Claim 1, and further comprising the step of storing availability records relating to available cargo charter flights, supplying shipper inquiries for available cargo charter flights, and producing a match within the management server between a shipper inquiry and an available cargo charter flight.

3. A method according to Claim 2, and further comprising the step of storing a plurality of shipper inquiries and maintaining selected shipper inquiries active for a predetermined period of time in which a carrier can respond.

4. A method according to Claim 1, and further comprising the step of storing carrier demand inquires that request a shipper offer on available cargo charter flights and matching the carrier demand inquires with shipper inquires within the management server to solicit an offer.

5. A method according to Claim 4, and further comprising the step of maintaining selected carrier demand inquires active for a predetermined period of time in which a shipper can respond.

6. A method according to Claim 1, wherein said document exchange server provides each of said cargo carrier and shipper with electronic documents to display at respective terminals of the cargo carrier and shipper.

7. A method according to Claim 6, and further comprising the step of a shipper initiating a request for quote and a cargo carrier offering a contract with terms in response to the offering.

8. A method according to Claim 1, wherein said publicly accessible communications network comprises an Internet.

9. A method according to Claim 8, and further comprising the step of inputting by at least one cargo carrier any available cargo charter flights within an inventory database connected to the management server.

10. A method according to Claim 9, and further comprising the step of accessing by a shipper the inventory database connected to the management server to select an available charter flight.

11. A method according to Claim 1, and further comprising the step of publishing ad-hoc availability by a least one cargo carrier onto the publicly accessible communications network.

12. A method according to Claim 1, and further comprising the step of coordinating any physical trucking, palletization and loading/unloading processes through the document exchange server.

13. A method of facilitating cargo charter flights comprising the steps of:

providing an operations control center having a management server that is in communication with a terminal of a cargo carrier and a terminal of a shipper via a publicly accessible communications network;

matching through the management server the availability of a cargo carrier for transporting cargo with a shipper having cargo to be shipped to a destination;

each of the cargo carrier and shipper accessing a document exchange server located at the charter operations control center for negotiating the terms of a charter contract between the cargo carrier and shipper; and

tracking the cargo charter flight while in the air on a display located at the terminal of the shipper.

14. A method according to Claim 13, and further comprising the step of storing availability records relating to available cargo charter flights, supplying shipper inquiries for available cargo charter flights, and producing a match within the management server between a shipper inquiry and an available cargo charter flight.

15. A method according to Claim 14, and further comprising the step of storing a plurality of shipper inquiries and maintaining selected shipper inquiries active for a predetermined period of time in which a cargo carrier can respond.

16. A method according to Claim 13, and further comprising the step of storing carrier demand inquires that request a shipper offer on available cargo charter flights and matching the carrier demand inquires with shipper inquires within the management server to solicit an offer.

17. A method according to Claim 16, and further comprising the step of maintaining selected carrier demand inquires active for a predetermined period of time in which a shipper can respond.

18. A method according to Claim 13, and further comprising the step of tracking the charter flight based on the tail number of an aircraft corresponding to the cargo charter flight.

19. A method according to Claim 18, and further comprising the step of tracking the charted flight on a display located at the terminal of the cargo carrier.

20. A method according to Claim 19, wherein the step of tracking further comprises the step of tracking the cargo charter flight via a graphical user interface showing the geographic location of the chartered flight.

21. A method according to Claim 13, wherein said document exchange server provides each of said cargo carrier and shipper with electronic documents to display at respective terminals of the cargo carrier and shipper.

22. A method according to Claim 21, and further comprising the step of the shipper initiating a request for quote and the cargo carrier offering a contract with terms in response to the offering.

23. A method according to Claim 13, wherein said publicly accessible communications network comprises an Internet.

24. A method according to Claim 23, and further comprising the step of inputting by at least one cargo carrier any available cargo charter flights within an inventory database connected to the network based management server.

25. A method according to Claim 24, and further comprising the step of accessing by a shipper the inventory database connected to the management server to select an available cargo charter flight.

26. A method according to Claim 13, and further comprising the step of publishing ad-hoc availability by a least one cargo carrier onto the communications network.

27. A method according to Claim 13, and further comprising the step of coordinating any physical trucking, palletization and loading/unloading processes through the document exchange server.

28. A method of facilitating cargo charter flights comprising the steps of:

inputting the availability of a cargo charter flight into an inventory database connected to a management server located at an operations control center that is in communication via a publicly accessible communications network with a terminal of a cargo carrier and a terminal of a shipper;

searching the inventory database for a desired criteria of available cargo charter flights;

receiving at the terminal of the shipper a listing of any cargo charter flights that meet the desired criteria;

selecting a desired cargo charter flight based on the received listing; and

initiating by the shipper a request for quote via a document exchange server located at the operations control center.

29. A method according to Claim 28, and further comprising the step of tracking the cargo charter flight while in the air on a display located at the terminals of the cargo carrier and shipper based on

the tail number of an aircraft used for the cargo charter flight.

30. A method according to Claim 29, wherein the step of tracking further comprises the step of tracking the cargo charter flight via a graphical user interface showing the geographic location of the cargo charter flight.

31. A method according to Claim 28, wherein said document exchange server provides each of said cargo carrier and shipper with electronic documents to display at a respective terminal of cargo carrier and shipper.

32. A method according to Claim 28, and further comprising the step of the cargo carrier offering a contract in response to the request for quote received from the shipper.

33. A method according to Claim 28, wherein said publicly accessible communications network comprises an Internet.

34. A method according to Claim 28, and further comprising the step of coordinating any physical trucking, palletization and loading/unloading processes through the document exchange server.

35. A method of facilitating cargo charter cargo flights comprising the steps of:

providing a management server located at an operations control center that is in communication via a publicly accessible communications network with a terminal of at least one cargo carrier and a terminal of at least one shipper;

inputting into the communications network and management server from the terminal of the at least one shipper a shipper inquiry indicating an interest in chartering a cargo flight;

responding to the shipper inquiry by matching within the management server a cargo carrier to the shipper inquiry; and

each of the shipper and cargo carrier accessing a document exchange server located at the operations control center for negotiating the terms of a charter contract between the cargo carrier and shipper.

36. A method according to Claim 35, and further comprising the step of registering in the communications network a carrier demand inquiry from a carrier offering a cargo charter flight.

37. A method according to Claim 36, and further comprising the step of monitoring the management server for any intent by a shipper in the carrier demand inquiry.

38. A method according to Claim 35, and further comprising the step of tracking cargo charter flight via a graphical user interface at a display located at the terminal of the shipper and showing the geographic location of the chartered cargo flight.

39. A method according to Claim 35, wherein said document exchange server provides each of said cargo carrier and shipper with electronic documents to display at respective cargo carrier and shipper terminals.

40. A method according to Claim 35, and further comprising the step of the shipper initiating a request for quote and the cargo carrier offering a contract in response to the request for quote.

41. A method according to Claim 35, wherein said communications network comprises an Internet.

42. A method according to Claim 35, and further comprising the step of coordinating any

physical trucking, palletization and loading/unloading processes through the document exchange server.

43. A method of facilitating cargo charter flights comprising the steps of:

providing a management server located at an operations control center that is in communication via a publicly accessible communications network with a terminal of at least one cargo carrier and a terminal of at least one shipper;

inputting into the communications network to the management server from the terminal of at least one cargo carrier a carrier demand inquiry indicating an availability of a cargo charter flight;

responding to the carrier demand inquiry by matching within the management server a shipper to the carrier demand inquiry; and

each of the shipper and cargo carrier accessing a document exchange server located at the charter operations control center for negotiating the terms of a charter contract between the cargo carrier and shipper.

44. A method according to Claim 43, and further comprising the step of registering a carrier demand inquiry indicative of the availability of cargo charter flights.

45. A method according to Claim 44, and further comprising the step of monitoring the communications network from the management server for a response by a shipper to the carrier demand inquiry.

46. A method according to Claim 44, and further comprising the step of tracking a cargo charter flight via a graphical user interface located at a terminal of a shipper and showing the geographic location of the cargo charter flight.

47. A method according to Claim 44, wherein said document exchange server provides each of said cargo carrier and shipper with electronic documents to display at respective terminals of said cargo carrier and shipper.

48. A method according to Claim 44, and further comprising the step of the shipper initiating a request for quote and the cargo carrier offering a contract.

49. A method according to Claim 44, wherein said communications network comprises an Internet.

50. A method according to Claim 44, and further comprising the step of coordinating any physical trucking, palletization and loading/unloading processes through the document exchange server.

51. A system for facilitating cargo charter flights comprising:

an operations control center, comprising

an inventory database for storing data relating to the availability of cargo charter flights of a plurality of cargo carriers;

a management server connected to said inventory database and to a publicly accessible communications network for receiving carrier demand inquiries from a terminal of a cargo carrier relating to the availability of cargo charter flights and receiving shipper inquiries from a terminal of a shipper connected to the communications network that requests a cargo charter; and

a document exchange server for negotiating the terms of a charter contract between the carrier and the shipper.

52. A system according to Claim 51, wherein said document exchange server provides each of a cargo

carrier and shipper with electronic documents to display at respective terminals of a cargo carrier and shipper.

53. A system according to Claim 51, wherein said publicly accessible communications network comprises an Internet.

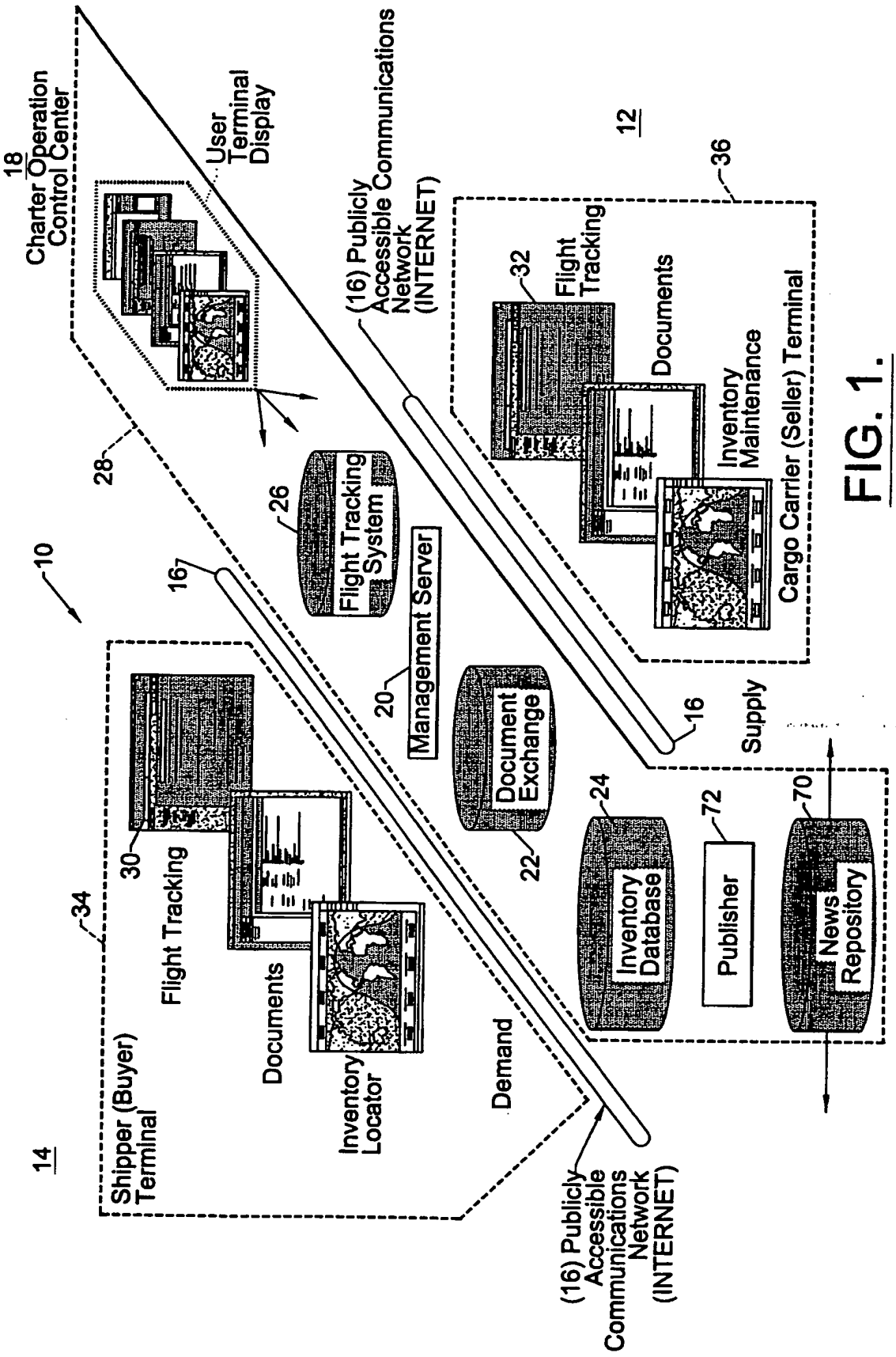
18
Charter Operation Control Center
User Terminal Display
(16) Publicly Accessible Communications Network (INTERNET)
12
36
32
Flight Tracking
Documents
Inventory Maintenance
Cargo Carrier (Seller) Terminal
28
26
Flight Tracking System
10
16
Management Server
20
Document Exchange
22
Supply
24
Inventory Database
72
Publisher
70
News Repository
30
Flight Tracking
Documents
Inventory Locator
34
Shipper (Buyer) Terminal
14
Demand
(16) Publicly Accessible Communications Network (INTERNET)

FIG. 1.

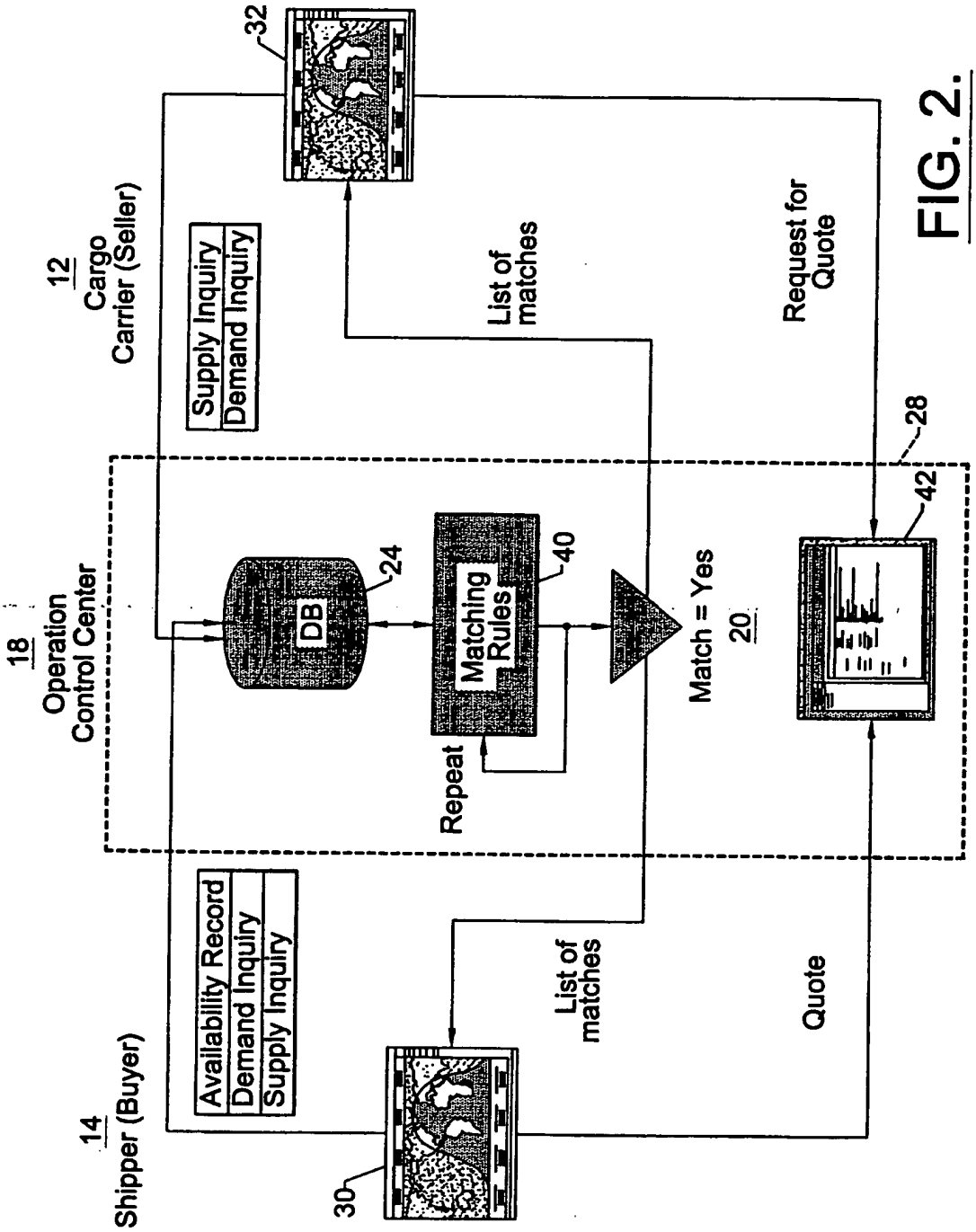
32
12
Cargo
Carrier (Seller)
Supply Inquiry
Demand Inquiry
List of
matches
Request for
Quote
28
42
18
Operation
Control Center
DB
24
Matching
Rules
40
Repeat
Match = Yes
20
Availability Record
Demand Inquiry
Supply Inquiry
14
Shipper (Buyer)
30
List of
matches
Quote

FIG. 2.

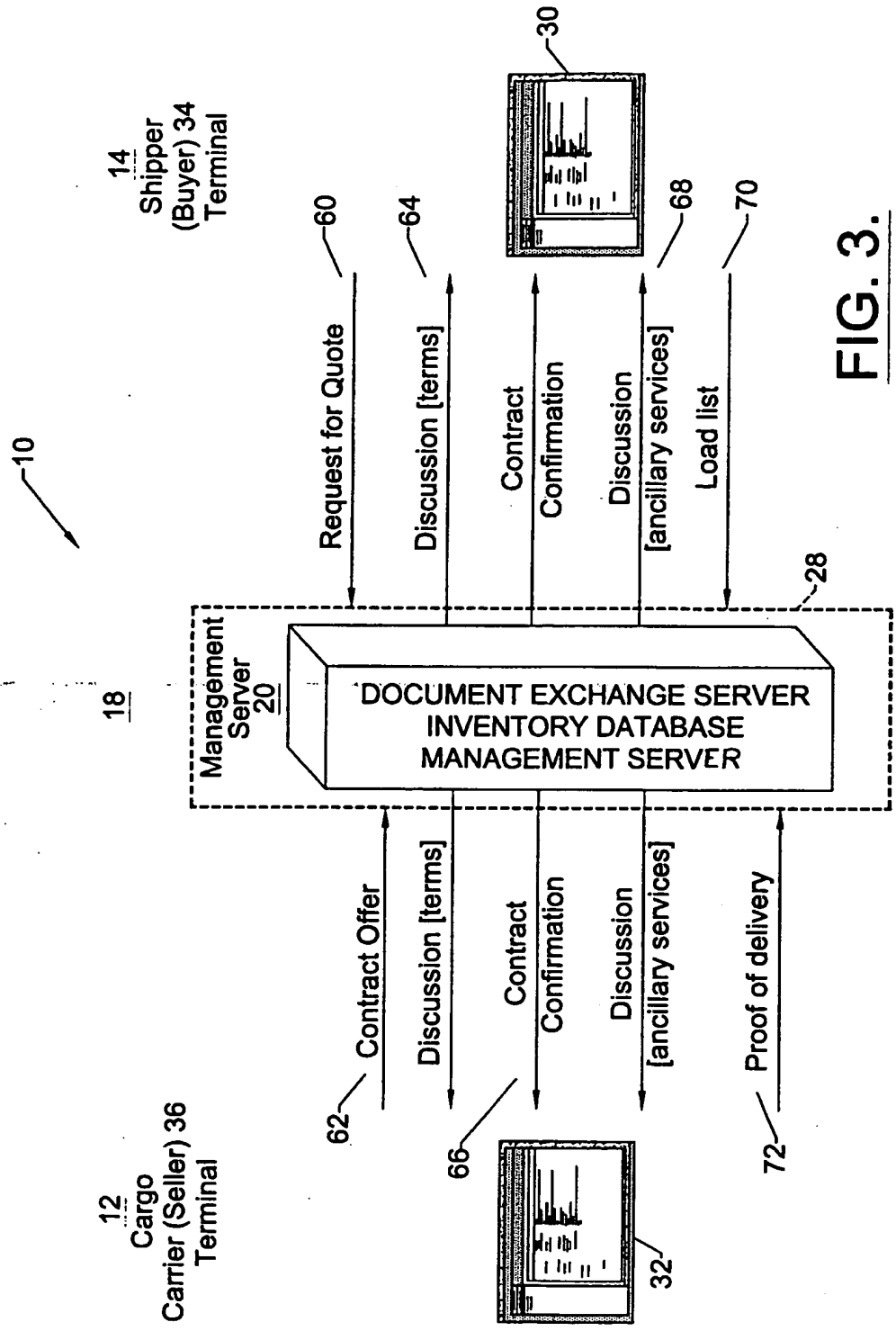
10
14
Shipper
(Buyer) 34
Terminal
30
60
64
68
70
Request for Quote
Discussion [terms]
Contract
Confirmation
Discussion
[ancillary services]
Load list
28
18
Management
Server
20
DOCUMENT EXCHANGE SERVER
INVENTORY DATABASE
MANAGEMENT SERVER
Contract Offer
Discussion [terms]
Contract
Confirmation
Discussion
[ancillary services]
Proof of delivery
62
66
72
12
Cargo
Carrier (Seller) 36
Terminal
32

FIG. 3.

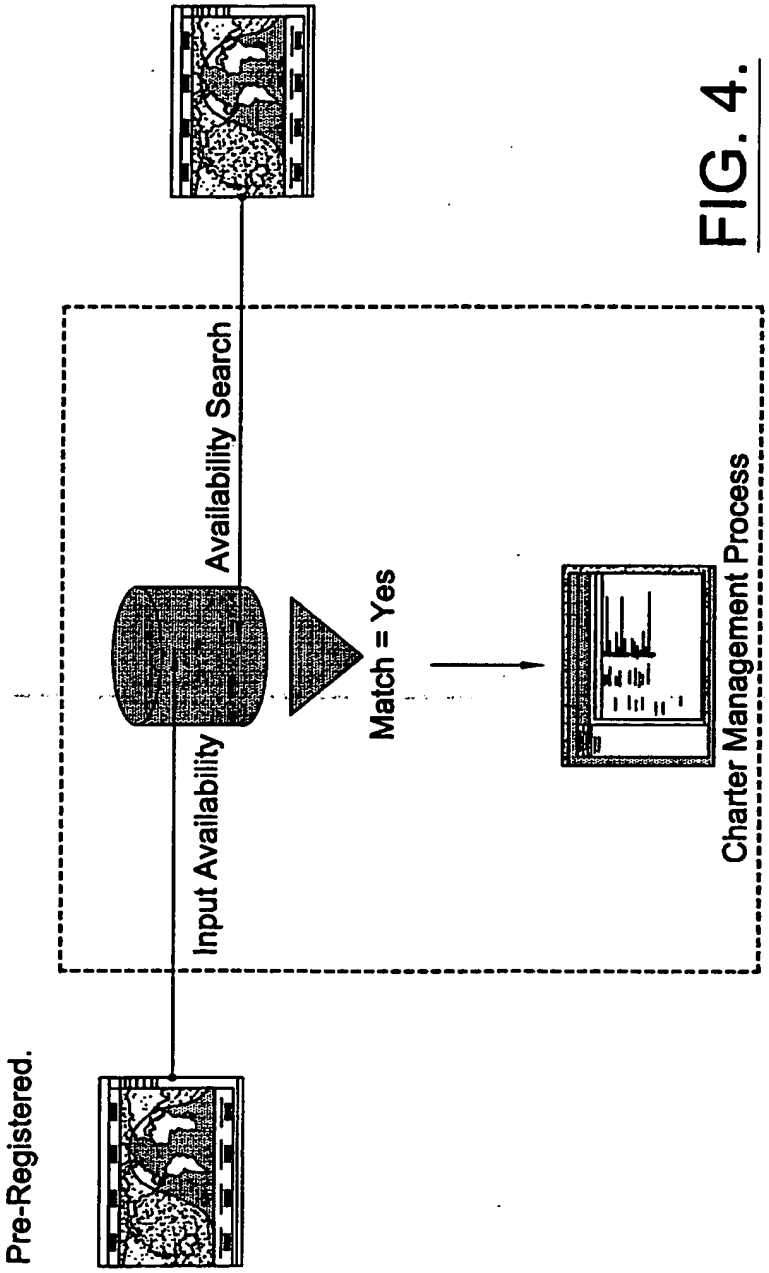
Availability Search
Match = Yes
Input Availability
Charter Management Process
Pre-Registered.

FIG. 4.

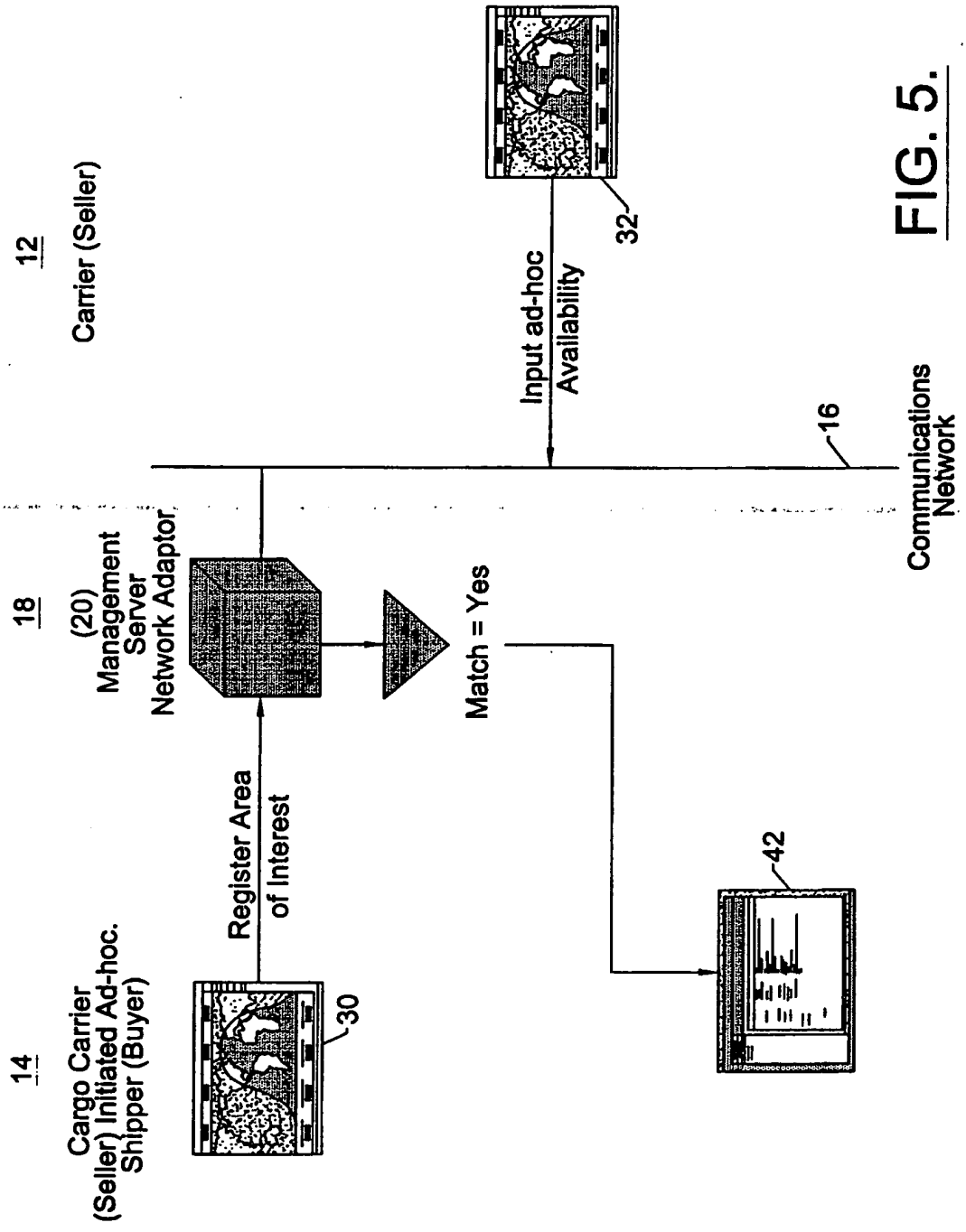
12
Carrier (Seller)
32
Input ad-hoc Availability
16
Communications Network
18
(20)
Management Server Network Adaptor
Match = Yes
42
Register Area of Interest
14
Cargo Carrier (Seller) Initiated Ad-hoc. Shipper (Buyer)
30

FIG. 5.

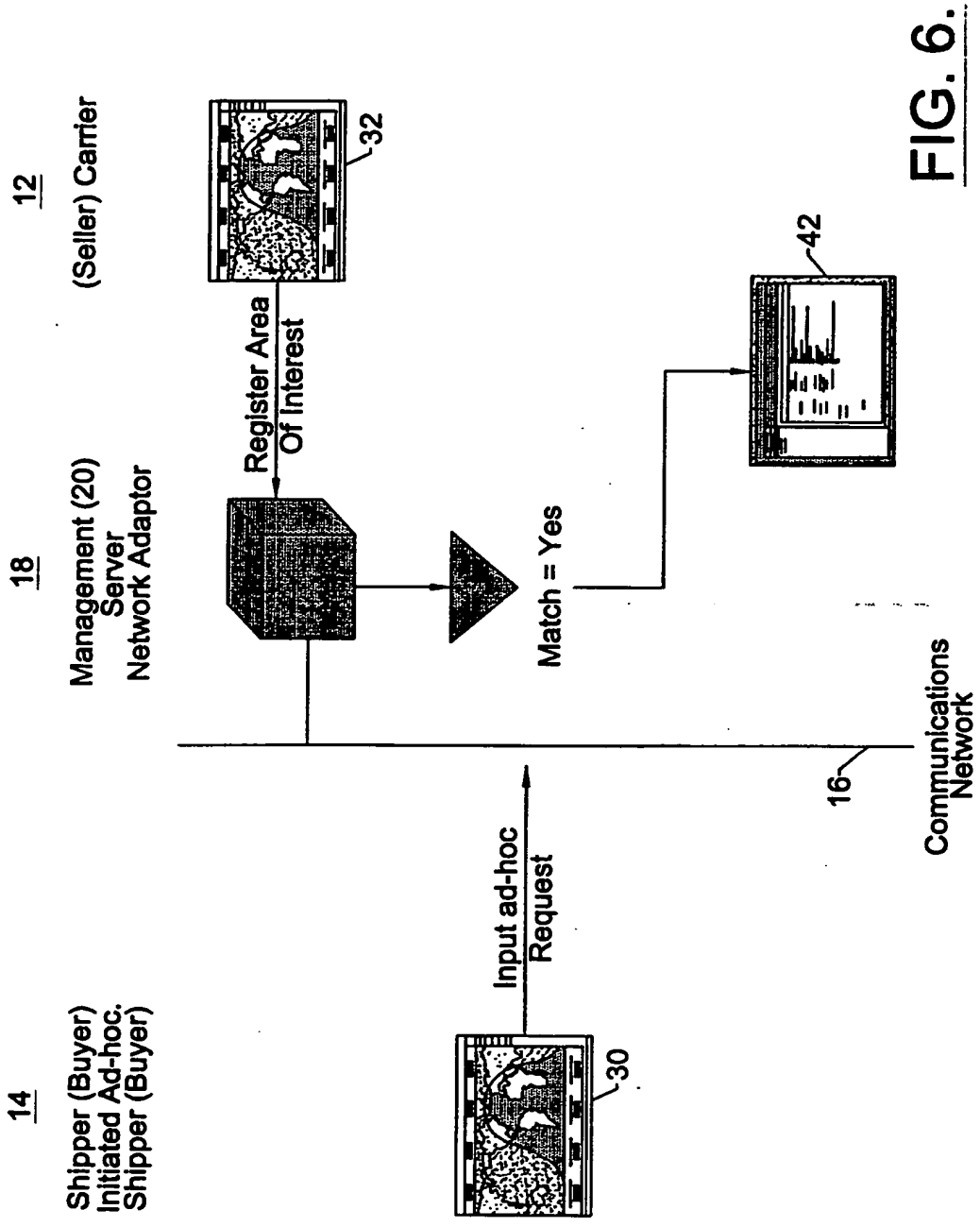
12
(Seller) Carrier
32
Register Area
Of Interest
18
Management (20)
Server
Network Adaptor
Match = Yes
42
16
Communications
Network
Input ad-hoc
Request
14
Shipper (Buyer)
Initiated Ad-hoc.
Shipper (Buyer)
30

FIG. 6.

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WEST

Printer: cpk2_4c32_gbfrptr

Date: 03/02/04

Time: 20:51:36

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